Listing of Claims:

1. (Currently Amended) A semiconductor laser ~~characterized by~~ comprising:

a substrate made of InP;

an active layer including a multiquantum well structure formed above the substrate, the active layer having a width and a thickness which are constant in a direction of a resonator length L, the width of the active layer being in a ~~width~~ range of 7 to 14 μm; and

an n-type cladding layer made of InGaAsP and a p-type cladding layer made of InP which are formed above the substrate with the active layer interposed therebetween, a bandgap wavelength of the InGaAsP of the n-type cladding layer being in a range between 0.96 μm and 0.98 μm,

wherein the n-type cladding layer made of InGaAsP has a refractive index that is higher than a refractive index of the p-type cladding layer made of InP, so that distribution of light generated in the active layer is biased to the n-type cladding layer to suppress an increase of optical loss due to inter valance band absorption in the p-type cladding layer, and

wherein light which oscillates only in a fundamental lateral mode to be emitted from an exit facet is configured to be optically coupled with an external single mode optical fiber

without generation of a higher lateral mode, and the light emitted from the exit facet has a spot size such that a ratio of a horizontal size to a vertical size of the spot size is in a range of 1:0.65 to 1:1.35.

2. (Currently Amended) The semiconductor laser according to claim 1, ~~characterized in that~~ wherein the light emitted from the exit facet is optically coupled with the external single mode optical fiber without ~~resort to~~ using a lens.

3. (Currently Amended) The semiconductor laser according to claim 1, ~~characterized in that~~ wherein the light emitted from the exit facet is optically coupled with the external single mode optical fiber by a butt joint.

4. (Currently Amended) The semiconductor laser according to claim 1, ~~characterized by~~ further comprising:

a first separate confinement heterostructure (SCH) layer made of InGaAsP, which is formed between the active layer and the n-type cladding layer; and

a second SCH layer made of InGaAsP, which is formed between the active layer and the p-type cladding layer.

5. (Currently Amended) The semiconductor laser according to claim 4, ~~characterized in that~~ wherein

the first SCH layer includes a multilayer structure formed of a plurality of layers, and the

second SCH layer includes a multilayer structure formed of a plurality of layers.

6. (Currently Amended) The semiconductor laser according to claim 5, ~~characterized in that~~ wherein:

~~assuming that~~ a refractive index of a plurality of partition layers in the active layer is ns;

~~that a~~ respective refractive ~~index and thickness~~ indices of said plurality of layers in the first SCH layer are n1, n2, n3, ..., nN, respectively, and respective thicknesses of said plurality of layers in the first SCH layer are t1, t2, t3, ..., tN, respectively, sequentially from a side closer to the active layer; ~~and~~

~~that a~~ respective refractive ~~index and thickness~~ indices of said plurality of layers in the second SCH layer are n1, n2, n3, ..., nN, respectively, and respective thicknesses of said plurality of layers in the second SCH layer are t1, t2, t3, ..., tN, respectively, sequentially from ~~the~~ a side closer to the active layer; [[,]]

a refractive index of the n-type cladding layer is na;

a refractive index of the p-type cladding layer is nb; and

the following relationships are satisfied:

t1 = t2 = t3 = , . . . , = tN,

ns > n1 > n2 > n3 > , . . . , > nN > na > nb, and

ns-n1 > n1-n2 > n2-n3 > , . . . , > nN-nb > nN-na.

~~a relationship of the thicknesses of the layers is mutually uniform, being set in a relation of:~~

~~t1=t2=t3=, . . . , =tN,~~

~~a great and small relationship of the refractive indexes of the layers is set so as to be smaller as going further from the active layer as shown below, including a relationship in which the refractive index ns of the active layer is highest, and a refractive index na of the n-type cladding layer is higher than a refractive index nb of the p-type cladding layer:~~

~~ns>n1>n2>n3>, . . . , nN>na>nb, and further~~

~~a refractive index difference between mutually adjacent layers among said plurality of layers which compose the first SCH layer and second SCH layer is set to be smaller as going from the active layer to the n-type cladding layer and p-type cladding layer in a relationship of:~~

~~ns-n1>n1-n2>n2-n3>, . . . , >nN-nb>nN-na.~~

7. (Currently Amended) The semiconductor laser according to claim 5, ~~characterized in that~~ wherein:

~~assuming that~~ a refractive index of a plurality of partition layers in the active layer is ns;

~~that a~~ respective refractive ~~index and thickness~~ indices of said plurality of layers in the first SCH layer are n1, n2, n3, ..., nN, respectively, and respective thicknesses of said plurality of layers in the first SCH layer are t1, t2, t3, ..., tN, respectively, sequentially from a side closer to the active layer; ~~and~~

~~that a~~ respective refractive ~~index and thickness~~ indices of said plurality of layers in the second SCH layer are n1, n2, n3, ..., nN, respectively, and respective thicknesses of said plurality of layers in the second SCH layer are t1, t2, t3, ..., tN, respectively, sequentially from ~~the~~ a side closer to the active layer; [[,]]

a refractive index of the n-type cladding layer is na;

a refractive index of the p-type cladding layer is nb; and

the following relationships are satisfied:

ns > n1 > n2 > n3 > , . . . , > nN > na > nb,

nN-nb > nN-na,

ns-n1 = n1-n2 = n2-n3 = , . . . , = nN-nb, and

t1 < t2 < t3 , . . . , < tN.

~~a great and small relationship of the refractive indexes of the layers is set so as to be smaller as going further from the active layer as shown below, including a relationship in which~~

~~the refractive index ns of the active layer is highest, and a refractive index na of the n-type cladding layer is higher than a refractive index nb of the p-type cladding layer:~~

~~ns>n1>n2>n3>, . . . , nN>na>nb,~~

~~a refractive index difference between mutually adjacent layers among said plurality of layers which compose the first SCH layer and second SCH layer is set to be in a relationship of:~~

~~ns-n1=n1-n2=n2-n3=, . . . , =nN-nb (provided that nN-nb>nN-na), and~~

~~a relationship of the thicknesses of the layers is set in the following relation so as to be larger as being more remote from the active layer:~~

~~t1<t2<t3, . . . , <tN.~~

8. (Currently Amended) The semiconductor laser according to claim 5, ~~characterized in that~~ wherein:

~~assuming that~~ a refractive index of a plurality of partition layers in the active layer is ns;

~~that a~~ respective refractive ~~index and thickness~~ indices of said plurality of layers in the first SCH layer are n1, n2, n3, ..., nN, respectively, and respective thicknesses of said plurality of layers in the first SCH layer are t1, t2, t3, ..., tN, respectively, sequentially from a side closer to the active layer; ~~and~~

~~that a~~ respective refractive ~~index and thickness~~ indices of said plurality of layers in the second SCH layer are n1, n2, n3, ..., nN, respectively, and respective thicknesses of said plurality of layers in the second SCH layer are t1, t2, t3, ..., tN, respectively, sequentially from ~~the~~ a side closer to the active layer; [[,]]

a refractive index of the n-type cladding layer is na;

a refractive index of the p-type cladding layer is nb; and

the following relationships are satisfied:

ns > n1 > n2 > n3 > , . . . , > nN > na > nb,

ns-n1 > n1-n2 > n2-n3 >, . . . , > nN-nb > nN-na, and

t1 < t2 < t3 < , . . . , < tN.

~~a great and small relationship of the refractive indexes of the layers is set so as to be smaller as going further from the active layer as shown below, including a relationship in which the refractive index ns of the active layer is highest, and a refractive index na of the n-type cladding layer is higher than a refractive index nb of the p-type cladding layer:~~

~~ns>n1>n2>n3>, . . . , nN>na>nb,~~

~~a refractive index difference between mutually adjacent layers among said plurality of layers which compose the first SCH layer and second SCH layer is set to be smaller as going further from the active layer in a relationship of:~~

~~ns-n1>n1-n2>n2-n3>, . . . , >nN-nb>nN-na, and~~

~~a relationship of the thicknesses of the layers is set in the following relation so as to be larger as being more remote from the active layer:~~

~~t1<t2<t3<, . . . , <tN.~~

9. (Currently Amended) The semiconductor laser according to claim 5, ~~characterized in that~~ wherein:

~~assuming that~~ a refractive index of a layer having ~~the~~ a lowest refractive index among the layers forming the active layer is ns;

~~that a~~ respective refractive ~~index and thickness~~ indices of said plurality of layers in the first SCH layer are n1, n2, n3, ..., nN, respectively, and respective thicknesses of said plurality of layers in the first SCH layer are t1, t2, t3, ..., tN, respectively, sequentially from a side closer to the active layer; ~~and~~

~~that a~~ respective refractive ~~index and thickness~~ indices of said plurality of layers in the second SCH layer are n1, n2, n3, ..., nN, respectively, and respective thicknesses of said plurality of layers in the second SCH layer are t1, t2, t3, ..., tN, respectively, sequentially from ~~the~~ a side closer to the active layer; [[,]]

a refractive index of the n-type cladding layer is na;

a refractive index of the p-type cladding layer is nb; and

the following relationships are satisfied:

t1 = t2 = t3 = , ... , = tN,

ns > n1 > n2 > n3 > , . . . , > nN > nb,

na > nN, and

ns-n1 > n1-n2 > n2-n3 > , . . . , > n(N-1)-nN.

~~a relationship of the thicknesses of the layers is set to be equal to each other in a relationship of:~~

~~t1=t2=t3=, . . . , =tN,~~

~~a great and small relationship of the refractive indexes of the layers is set so as to be smaller as going further from the active layer as shown below, including a relationship in which the refractive index ns of the active layer is highest, and a refractive index na of the n-type cladding layer is higher than a refractive index nb of the p-type cladding layer:~~

~~ns>n1>n2>n3>, . . . , nN>nb, and also na>nN, and~~

~~a refractive index difference between mutually adjacent layers among said plurality of layers which compose the first SCH layer and second SCH layer is set to be smaller as going from the active layer to the n-type cladding layer and the p-type cladding layer in a relationship of:~~

~~ns-n1>n1-n2>n2-n3>, . . . , >n(N-1)-nN.~~

10. (Currently Amended) The semiconductor laser according to claim 5, ~~characterized in that~~ wherein:

~~assuming that~~ a refractive index of a layer having ~~the~~ a lowest refractive index among the layers forming the active layer is ns;

~~that a~~ respective refractive ~~index and thickness~~ indices of said plurality of layers in the first SCH layer are n1, n2, n3, ..., nN, respectively, and respective thicknesses of said plurality of layers in the first SCH layer are t1, t2, t3, ..., tN, respectively, sequentially from a side closer to the active layer; ~~and~~

~~that a~~ respective refractive ~~index and thickness~~ indices of said plurality of layers in the second SCH layer are n1, n2, n3, ..., nN, respectively, and respective thicknesses of said plurality of layers in the second SCH layer are t1, t2, t3, ..., tN, respectively, sequentially from ~~the~~ a side closer to the active layer; [[,]]

a refractive index of the n-type cladding layer is na;

a refractive index of the p-type cladding layer is nb; and

the following relationships are satisfied:

ns > n1 > n2 > n3 > , . . . , > nN > nb,

na > nN,

ns-n1 = n1-n2 = n2-n3 = , . . . , = nN-nb, and

t1 < t2 < t3 < , . . . , < tN.

~~a great and small relationship of the refractive indexes of the layers is set so as to be smaller as going further from the~~

~~active layer as shown below, including a relationship in which the refractive index ns of the active layer is highest, and a refractive index na of the n-type cladding layer is higher than a refractive index nb of the p-type cladding layer:~~

~~ns>n1>n2>n3>, . . . , nN>nb, and also na>nN,~~

~~a refractive index difference between mutually adjacent layers among said plurality of layers which compose the first SCH layer and second SCH layer is set to be in a relation of:~~

~~ns-n1=n1-n2=n2-n3=, . . . , =nN-nb, and~~

~~relationship of the thicknesses of the layers is set to be larger as being more remote from the active layer in a relation of:~~

~~t1<t2<t3<, . . . , <tN.~~

11. (Currently Amended) The semiconductor laser according to claim 5, ~~characterized in that~~ wherein:

~~assuming that~~ a refractive index of a layer having ~~the~~ a lowest refractive index among the layers forming the active layer is ns;

~~that a~~ respective refractive ~~index and thickness~~ indices of said plurality of layers in the first SCH layer are n1, n2, n3, ..., nN, respectively, and respective thicknesses of said plurality of layers in the first SCH layer are t1, t2, t3, ...,

tN, respectively, sequentially from a side closer to the active layer; ~~and~~

~~that a~~ respective refractive ~~index and thickness~~ indices of said plurality of layers in the second SCH layer are n1, n2, n3, ..., nN, respectively, and respective thicknesses of said plurality of layers in the second SCH layer are t1, t2, t3, ..., tN, respectively, sequentially from ~~the~~ a side closer to the active layer; [[,]]

a refractive index of the n-type cladding layer is na;

a refractive index of the p-type cladding layer is nb; and

the following relationships are satisfied:

ns > n1 > n2 > n3 > , . . . , > nN > nb,

na > nN,

ns-n1 > n1-n2 > n2-n3 > , . . . , > n(N-1)-nN, and

t1 < t2 < t3 < , . . . , < tN.

~~a great and small relationship of the refractive indexes of the layers is set so as to be smaller as going further from the active layer as shown below, including a relationship in which the refractive index ns of the active layer is highest, and a refractive index na of the n-type cladding layer is higher than a refractive index nb of the p-type cladding layer:~~

~~ns>n1>n2>n3>, . . . , nN>nb, and also na>nN,~~

~~a refractive index difference between mutually adjacent layers among said plurality of layers which compose the first SCH~~

~~layer and second SCH layer is set to be smaller as going further from the active layer in a relationship of:~~

~~ns-n1>n1-n2>n2-n3>, . . . , >n(N-1)-nN, and~~

~~a relationship of the thicknesses of the layers is set to be larger as being more remote from the active layer in a relationship of:~~

~~t1<t2<t3<, . . . , <tN.~~

12. (Currently Amended) The semiconductor laser according to claim 4, ~~characterized in that~~ wherein the semiconductor laser is formed in a buried heterostructure.

13. (Currently Amended) The semiconductor laser according to claim 12, ~~characterized in that~~ wherein part of the n-type cladding layer, the first SCH layer, the active layer, the second SCH layer, and the p-type cladding layer ~~is~~ are formed in a mesa shape, and

wherein the semiconductor laser further comprises:

a first buried layer made of p-type InP, which ~~is formed with one side thereof~~ has a first side that is in contact with the semiconductor substrate or the n-type cladding layer at both sides of ~~each layer formed in~~ the mesa shape; and

a second buried layer made of n-type InP, which ~~is formed with one side thereof~~ has a first side that is in contact

with the p-type cladding layer, and ~~the other side thereof~~ a second side that is in contact with ~~the other~~ a second side of the first buried layer at both sides of ~~each layer formed in~~ the mesa shape.

14. (Currently Amended) The semiconductor laser according to claim 1, ~~characterized in that~~ wherein the semiconductor laser is formed in a ridge structure.

15. (Currently Amended) The semiconductor laser according to claim 14, ~~characterized in that, when~~ wherein the semiconductor substrate is ~~an~~ n-type, the p-type cladding layer ~~is formed as~~ comprises a ridge structure portion ~~with~~ at which substantially ~~the~~ a center of ~~the outside~~ an outer side of the p-type cladding layer is ~~being~~ raised ~~to the upside~~ upward, and

wherein the semiconductor laser further comprises:

a contact layer formed on ~~a upside~~ an upper side of the ridge structure portion ~~in~~ of the p-type cladding layer;

an insulating layer ~~having~~ which has an opening portion above a center of the contact layer, and which is formed to cover the p-type cladding layer including the ridge structure portion; and

an electrode formed on a top of the insulating layer with a part thereof connected to the contact layer.

Claims 16 and 17 (Canceled).

18. (Currently Amended) The semiconductor laser according to claim 1, ~~characterized in that~~ wherein, ~~when~~ the semiconductor substrate is ~~an~~ n-type, the n-type cladding layer is formed beneath the active layer, and the p-type cladding layer is formed above the active layer.

19. (Currently Amended) The semiconductor laser according to claim 1, ~~characterized in that~~ wherein, ~~when~~ the semiconductor substrate is [[a]] p-type, the n-type cladding layer is formed above the active layer, and the p-type cladding layer is formed beneath the active layer.